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Sreden Meditsinski Rabotnik, No 3, pp 13-18

## ENFORCED ANTAGONISM OF MICROBES

As. Teshkov, Senior Scientific Associate, RIEM (Republic Institute of Epidemiology and Microbiology) Bulgaria

Comment: The following is an excerpt from a Bulgarian article entitled "Antagonism of Microbes and Its Application in Medicine." Judging from information in the Soviet article "In I. I. Mechnikov's Footsteps," by N. S. Yegorov and M. A. Popovskiy, Priroda, Vol XLII, No 5, pages 120-122, 1953, Teshkov's discussion of enforced antagonism is apparently based on the work of Soviet Scientist I. G. Shiller ./

In the formation of all types of antagonism, two functions of cells play an important role: the functions of self-preservation and nutrition. Often the two functions coincide. It is characteristic that antagonism appears under specially created conditions which transform any microbe into the antagonist of another. If, for instance, B. subtilis or B. mesentericus, which are proteolytie, are cultivated together with streptococci in a medium that is poor in nitrogen, conditions which result in a struggle for nitrogen are brought about. Under the circumstances, the proteolytic bacilli utilize the streptococci as a nutrition. They obtain nutrition and multiply at the expense of the streptococci, forming pure bacterial cultures. Under ordinary condition, the bacilli and the streptococci grow independently of each other.

in antagonism are also known.

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This phenomenon, which is based on essential functions of microbes, namely, those of nutrition and self-preservation, has found practical medical application in the diagnosis of some infectious diseases. The antagonism between yeast and bacteria has long been used in practical medicine. Yeast is used successfully in treating a number of infections caused by staphylococci. Lysins active against staphylococci and the causative factors of typhoid, paratyphoid A and B, and tuberculesis, as well as against other bacteria have been obtained from yeast. The opposite phenomenon is also observed: bacteria may become antagonists of yeast. In other words, enforced antagonism is a biologically reversible property.

The principle involved permits the transformation of any microbe into the antagonist of another. If we place yeast and bacteria into an aqueous solution of glucose, yeast develops. On the other hand, if we place yeast and bacteria into a nutrient medium devoid of sugar, the bacteria develop at the expense of yeast, using the yeast as food.

Cultivation of bacteria on yeast is used for diagnostic purposes. In a medium devoid of sugar, tuberculosis bacilli grow on yeast. This method permits us to obtain cultures of tuberculosis bacilli in many cases of tuberculous infection and to set a correct diagnosis in this manner.

Natural or enforced antagonism may be either monovalent or divalent, may have either an intraspecies or an interspecies character, may be either functional or nonfunctional, etc.

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